



# NTS

WE ENGINEER SUCCESS

Test Report / MJO No. PR025467

Revision Level: 0

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Final Test Report of  
Z-Stack Lightning ZLL Control Bridge  
Firmware: 1.0.2  
Hardware: ZLL Control Bridge  
ZigBee Light Link (ZLL 1.0)

Issue Date: December 21, 2013

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Prepared for: **Texas instruments**  
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Prepared by: **National Technical Systems**  
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## PROJECT RESULTS

### OVERALL RESULT

**PASS**

### FIELD OF TESTING: ENGINEERING

The results contained within this test report relate only to the product(s) tested. This test report shall not be reproduced except in full, without the written approval of National Technical Systems.

### PRODUCT UNDER TEST

The following product was tested during this certification:

Product Information	
Date(s) Tested:	12/20/2013
Vendor Name:	Texas Instruments
Vendor Street Address:	9276 Scraton Road Suite 450
City, State, Zip	San Diego, CA 92121
Country:	USA
Phone Number:	858-638-4311
Contact, Title:	Steven Williams
Product Name:	Z-Stack Lighting ZLL Control Bridge
Product Version(s):	Firmware: 1.0.2
	Hardware: ZLL Control Bridge
Clusters:	Basic, ZLL Commissioning, Identify, Groups, Scenes, On/Off, Level Control, Color Control
Type:	Control Bridge

### EQUIPMENT AND SOFTWARE USED DURING TESTING

The following bench equipment was used in the testing of the product:

Software / Device	Version	ID #	Cal Date	Cal Due
NTS test harness + harness firmware	Version 1.139	X7703D	N/A	N/A
Ubiquita 1.3/ MC1322x USB Dongle	Version 1.3 Build 2168	X7264J	N/A	N/A

## 1. EXECUTIVE SUMMARY

National Technical Systems (NTS) has successfully conducted ZigBee Zigbee Light Link (ZLL) testing for ZigBee certification on the Texas Instruments (Client), Z-Stack Lighting ZLL Control Bridge FOR Zigbee Light Link (“Client’s product”).

The overall objective of the test was to measure the product performance characteristics within the limitations of the given ZigBee product adaptation. Client’s product has successfully **PASSED** ZigBee ZLL certification testing as outlined by the ZigBee Alliance, as outlined herein.

## 2. TEST METHODOLOGY

The ZigBee ZLL Certification process has been formulated and governed by the ZigBee Alliance.

Testing as outlined in this document only covers the ZigBee ZLL specifications listed below:

[1] ZigBee Light Link 1.0 Test Specification - 11-0039 rev09

For information on the certification process, policies, requirements or other details, please visit the ZigBee Alliance website at [www.zigbee.org](http://www.zigbee.org) or contact certification@zigbee.org

## 3. SUMMARY OF TESTS CONDUCTED & RESULTS

NTS performed the following tests according to the ZigBee ZLL specifications (detailed above):

TC	Spec	Test Cases	Mandatory / Optional	Results
		Preamble Tests		
2.1	[1]	TP-PRE-TC-01 Network Start	Mandatory	PASS
2.2	[1]	TP-PRE-TC-02 Network Start	Mandatory	PASS
2.3	[1]	TP-PRE-TC-03 Network join	Mandatory	PASS
2.4	[1]	TP-PRE-TC-04 Network join	Mandatory	PASS
2.5	[1]	TP-PRE-TC-05 Network join	Optional	PASS
2.6	[1]	TP-PRE-TC-06 Frequency Agility	Mandatory	PASS
2.7	[1]	TP-PRE-TC-07 Security Feature	Mandatory	N/A
2.8	[1]	TP-PRE-TC-08 Security Feature	Mandatory	PASS

TC	Spec	Test Cases	Mandatory / Optional	Results
		Cluster specific tests		
3.1	[1]	TP-CST-TC-01 On/Off Server	Mandatory	N/A
3.2	[1]	TP-CST-TC-02 On/Off Client	Mandatory	PASS
3.3	[1]	TP-CST-TC-03 Group Addressed Server	Mandatory	N/A
3.4	[1]	TP-CST-TC-04 Level Control Server	Mandatory	N/A
3.5	[1]	TP-CST-TC-05 Level Control Client	Optional	PASS

3.6	[1]	TP-CST-TC-06 Basic Server	Mandatory	PASS
3.7	[1]	TP-CST-TC-07 Basic Client	Mandatory	PASS
3.8	[1]	TP-CST-TC-08 Manufacturer Specific	Mandatory	N/A
3.9	[1]	TP-CST-TC-09 Identify Server	Mandatory	N/A
3.10	[1]	TP-CST-TC-10 Identify Client	Mandatory	PASS
3.11	[1]	TP-CST-TC-11 Groups Server	Mandatory	N/A
3.12	[1]	TP-CST-TC-12 Groups Client	Mandatory	PASS
3.13	[1]	TP-CST-TC-13 Scenes Server	Mandatory	N/A
3.14	[1]	TP-CST-TC-14 Scenes Client	Mandatory	PASS
3.15	[1]	TP-CST-TC-15 Color Control Server	Mandatory	N/A
3.16	[1]	TP-CST-TC-16 Color Control Client	Mandatory	PASS
3.17	[1]	TP-CST-TC-17 Color Control Color Loop Server	Mandatory	N/A
3.18	[1]	TP-CST-TC-18 Color Control Color Loop Client	Mandatory	PASS
3.19	[1]	TP-CST-TC-19 ZLL Commissioning Server	Mandatory	N/A
3.20	[1]	TP-CST-TC-20 ZLL Commissioning Client	Mandatory	PASS
3.21	[1]	TP-CST-TC-21 Color Control	Mandatory	N/A
3.22	[1]	TP-CST-TC-22 Color Control	Mandatory	N/A

TC	Spec	Test Cases	Mandatory / Optional	Results
		Network Interoperability tests		
4.1	[1]	TP-NW1-TC-01 Classical Joining	Mandatory	N/A
4.2	[1]	TP-NW1-TC-02 Classical Joining	Mandatory	N/A
4.3	[1]	TP-NW1-TC-03 Classical Joining	Mandatory	N/A
4.4	[1]	TP-NW1-TC-04 Classical Joining	Mandatory	PASS
4.5	[1]	TP-NW1-TC-05 Classical Joining	Optional	PASS
4.6	[1]	TP-NW1-TC-06 Classical Joining	Mandatory	PASS
4.7	[1]	TP-NW1-TC-07 Classical Joining	Mandatory	N/A
4.8	[1]	TP-NW1-TC-08 Classical Joining	Mandatory	PASS
4.9	[1]	TP-NW1-TC-09 Classical Joining	Mandatory	N/A
4.10	[1]	TP-NW1-TC-10 Classical Joining	Mandatory	PASS
4.11	[1]	TP-NW1-TC-11 Touchlinking	Mandatory	PASS
4.12	[1]	TP-NW1-TC-12 Touchlinking	Mandatory	PASS
4.13	[1]	TP-NW1-TC-13 Touchlinking	Mandatory	PASS
4.14	[1]	TP-NW1-TC-14 Interoperability	Mandatory	PASS

TC	Spec	Test Cases	Mandatory / Optional	Results
		ZLL Interoperability tests		
5.1	[1]	TP-LLI-TC-01 Touchlink	Mandatory	PASS
5.2	[1]	TP-LLI-TC-02 Touchlink	Mandatory	PASS
5.3	[1]	TP-LLI-TC-03 Touchlink	Mandatory	PASS

5.4	[1]	TP-LLI-TC-04 Touchlink	Mandatory	PASS
5.5	[1]	TP-LLI-TC-05 Touchlink	Optional	PASS
5.6	[1]	TP-LLI-TC-06 Frequency Agility	Mandatory	PASS
5.7	[1]	TP-LLI-TC-07 Level Control	Mandatory	PASS
5.8	[1]	TP-LLI-TC-08 Scenes	Mandatory	PASS
5.9	[1]	TP-LLI-TC-09 Color Control	Mandatory	PASS
5.10	[1]	TP-LLI-TC-10 Color Scenes	Mandatory	PASS
5.11	[1]	TP-LLI-TC-11 Single Remote	Mandatory	PASS
5.12	[1]	TP-LLI-TC-12 Multi Remote	Mandatory	PASS
5.13	[1]	TP-LLI-TC-13 Steal Back	Mandatory	PASS

\*EP - Endpoint

#### 4. COMMENTS AND OBSERVATIONS

This device contains two endpoints. One is for HA 0x0104 and the other is for ZLL 0x0C05E. In the simple descriptor under device ID, the device does not advertise itself as a ZLL Control Bridge under HA or ZLL profile. Instead the device advertise itself as a configuration tool 0x0005 for HA side and 0xE15E for ZLL side. The reasoning is that ZLL endpoint will be for internal usage, where it will take part in the interPAN messages processing and will not directly communicate with other devices.

#### 5. DETAILED TEST RESULTS

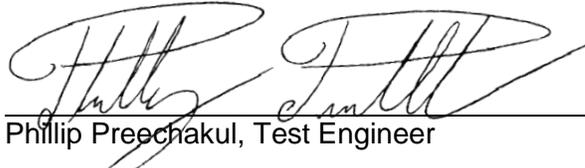
If you would like to see the detailed results for the tests, please contact NTS and we will provide the over the air trace capture files and test tool logs recorded during testing.

#### 6. CONCLUSION

On the ZigBee Smart Energy level, testing was conducted according to the ZigBee Light Link documents. Through testing with qualified ZigBee ZLL testers, Client's product has passed all relevant ZigBee Light Link test cases and therefore has satisfied the full ZigBee Light Link specification.

Note: The ZigBee Alliance has authorized NTS to perform all of the tests required for ZigBee ZLL certification. Nevertheless, it is the Alliance that issues the Statement of Certification. The role of NTS is limited to the execution of tests and the delivery of Statements of Qualification to the Alliance and Client. Any requests for errata or acceptances of non-compliant products will need to be made to the ZigBee Alliance.

**SIGNATURES**

Technical Review:   
Philip Preechakul, Test Engineer

Program Manager:   
Mansour Salamat, Operations Manager

Thank you for giving NTS the opportunity to provide you with testing and certification services. As part of our continuous improvement process, we'd appreciate it if you would take just a couple minutes to provide us with your feedback at <http://www.ntscorp.com/customerurvey>

Your feedback will be reviewed by the NTS Customer Service Team to enable us to provide the best service possible for our customers. If you have any questions or comments, please call us at 310-641-7700, email a member of our staff, or email our customer service department through our web site <http://www.nts.com/about/contact> . We appreciate your business, and we look forward to working with you in the future.

7. Revision History

Revision	Description	Date
0	<ul style="list-style-type: none"> <li>New Issue</li> </ul>	2/8/2013
	<ul style="list-style-type: none"> <li></li> </ul>	
	<ul style="list-style-type: none"> <li></li> </ul>	

	<ul style="list-style-type: none"><li>•</li></ul>	
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